

REMARKS

Upon entry of the foregoing Amendment, claims 1-2, 4, 6-8, 10-39, 41-43, and 57-62 are pending in the application. Claims 1-2, 4, 15, 18-19, 21, 24, 27-29, and 38-39 have been amended. No claims have been cancelled. Claims 57-62 have been newly added. Applicants believe that this Amendment does not add new matter. In view of the foregoing Amendment and the following Remarks, allowance of all the pending claims is requested.

EXAMINER INTERVIEW

Applicants thank Examiner Wozniak for granting Applicants' representative the courtesy of an Examiner Interview on September 30, 2008. During the Examiner interview, Applicants' representative and the Examiner agreed upon various distinctions between the claimed invention and the references relied upon in the rejections, as set forth in further detail below.

CLAIM OBJECTIONS

The Examiner has objected to claim 27 because of alleged informalities. Solely for purposes of expediting prosecution of this application, and without acknowledging the propriety of the alleged basis for the objection, Applicants note that claim 27 has been amended as indicated above. Accordingly, for at least the reason that the amendment to claim 27 fully addresses the objection that the Examiner has raised, Applicants request that the Examiner withdraw this objection to the claims.

NON-STATUTORY DOUBLE PATENTING REJECTION

The Examiner has provisionally rejected claims 1 and 28 under the judicially created doctrine of non-statutory obviousness-type double patenting, as allegedly being unpatentable over claim 44 of co-pending U.S. Patent Application Serial No. 10/452,147, which issued as U.S. Patent No. 7,398,209 on July 8, 2008.

Applicants will consider filing a terminal disclaimer to overcome this rejection once otherwise patentable subject matter has been determined. Furthermore, Applicants note that the filing of a terminal disclaimer to obviate a rejection based on non-statutory double

patenting does not constitute an admission of the propriety of the rejection. See *Quad Environmental Technologies Corp. v. Union Sanitary District*, 946 F.2d 870 (Fed. Cir. 1991).

REJECTION UNDER 35 U.S.C. § 103

1. CLAIMS 1-2, 4, 6, 13, 15-17, 22-23, 27-28, 31-32, AND 41

The Examiner has rejected claims 1-2, 4, 6, 13, 15-17, 22-23, 27-28, 31-32, and 41 under 35 U.S.C. § 103 as allegedly being unpatentable over U.S. Patent No. 6,615,172 to Bennett et al. ("Bennett") in view of "A Distributed Architecture for Cooperative Spoken Dialogue Agents with Coherent Dialogue State and History to Lin et al. ("Lin"). This rejection is improper for at least the reason that Bennett and Lin, either alone or in combination, fail to disclose, teach, or suggest each and every feature of the claimed invention.

More particularly, neither Bennett nor Lin, either alone or in combination, disclose, teach, or suggest at least the feature of "a speech recognition engine configured to recognize at least one of words or phrases from the electronic signal using at least the data received from the plurality of domain agents, wherein the data used by the speech recognition engine is dynamically updated based on at least a history of one or more prior dialogs associated with the user," as recited in independent claim 1, for example.

The Examiner alleges that Bennett discloses a "speech recognizer for recognizing query words/phrases that relies on context data from different domains." The Examiner further alleges that Bennett "teaches an acoustic recognition dictionary that varies based on a current dialog context," and that Lin teaches "these varying contexts are handled by spoken dialog agents." Thus, the Examiner concludes by alleging that "the combination of the prior art of record teaches the aforementioned claim limitation."

The Examiner's combination of the alleged teachings of Bennett and Lin is improper for at least the reason that Lin teaches away from the claimed invention and specifically emphasizes the importance of employing a distributed model to partition domain-independent procedures from domain-dependent procedures. For example, in Section 2.2, Lin describes "the potential problems of the centralized model," which form the basis for Lin's description of a "modularized and partitioned model" in which "each functional component should be

modularized and partitioned into the domain-independent procedure and the domain-dependent data.” In this context, Lin notes that “acoustic recognition” is a domain-independent procedure, which is specifically separated from procedures that use domain-dependent data.

Thus, even if the Examiner correctly characterized Bennett as varying an acoustic recognition dictionary based on context data from different domains or a current dialog context (which Applicants do not concede), a person having ordinary skill in the art would recognize that Lin teaches away from using data “received from the plurality of domain agents” in a speech recognition process, as Lin specifically disavows the use of dialogue state information and/or domain knowledge in the speech recognition procedure (e.g., “to reduce the network bandwidth requirement”). For example, Figure 2 of Lin clearly illustrates that state dependent data, including dialogue state and dialogue history information, is partitioned and maintained separately from the speech recognition procedure, such that dialogue state and history information is not available during speech recognition.

The Examiner’s further reliance on Lin’s description of the “graph search portion of a speech recognition process” fails to address the foregoing deficiencies of the reference because the claimed invention distinctly recites “a speech recognition engine configured to recognize at least one of words or phrases” and “a parser configured to interpret the recognized words or phrases.” At best, the graph search and parsing module described in Lin could broadly be characterized as function related to that of the claimed “parser,” not to the claimed “speech recognition engine.” Thus, Lin’s description of a graph search and parsing procedure cannot be properly relied upon to allegedly disclose, teach, or suggest features relating to the claimed “speech recognition engine.”

Moreover, assuming *arguendo* that the Examiner has properly combined the teachings of Bennett and Lin, and further assuming that the Examiner correctly characterized Bennett as varying an acoustic recognition dictionary based on context data from different domains or a current dialog (neither of which Applicants concede), the alleged teachings of Bennett nonetheless fail to disclose, teach, or suggest that “the data used by the speech recognition

engine is dynamically updated based on at least a history of one or more prior dialogs associated with the user," as recited in independent claim 1, for example.

In particular, Bennett describes the data used by the speech recognition engine in the section entitled "Dictionary Preparation & Grammar Files" in columns 27-28 of Bennett. In these passages, Bennett indicates that "specific grammars are dynamically loaded or actively configured as the *current* grammar according to the user's context," but further states that the grammars used in the speech recognition are discarded once recognition of the current user utterance has completed. For instance, Bennett provides that "[o]nce the user's speech is recognized, . . . the speech engine is un-initialized," wherein un-initialization includes deleting all of the objects created when the speech recognition engine was initialized, and further clearing all memory allocated when the speech recognition engine was initialized.

Thus, because Bennett flushes the data used by the speech recognition engine when recognition for a current utterance is complete, Bennett does not disclose, teach, or suggest at least the feature of "wherein the data used by the speech recognition engine is dynamically updated based on at least a history of one or more prior dialogs associated with the user," as recited in independent claim 1, for example. Lin fails to cure this deficiency of Bennett for at least the reasons discussed above, wherein Lin specifically describes a system that partitions dialogue history and dialogue state information from the speech recognition procedure.

Therefore, for at least these reasons, Bennett and Lin, either alone or in combination, fail to disclose, teach, or suggest at least the feature of "a speech recognition engine configured to recognize at least one of words or phrases from the electronic signal using at least the data received from the plurality of domain agents, wherein the data used by the speech recognition engine is dynamically updated based on at least a dialog history associated with the user," as recited in independent claim 1, for example. The rejection is therefore improper and should be withdrawn.

In addition to the reasons given above, neither Bennett nor Lin, either alone or in combination, disclose, teach, or suggest at least the feature of "an agent architecture configured to communicatively couple services of each of an agent manager, a system agent, the plurality of domain agents, and an agent library, wherein the selected domain agent is

configured to use the communicatively coupled services to create a response to the formulated question or command," as recited in independent claim 1, for example. The Examiner alleges that Bennett discloses a "shared architecture between system components," and that "Lin teaches an architecture wherein a user interface agent receives responses from the specific [spoken dialogue agents] and then transmits them to a user."

Even assuming *arguendo* that the Examiner has correctly characterized both Bennett and Lin (which Applicants do not concede), the rejection is facially improper because the agent architecture recited in independent claim 1 includes specific components that the Examiner has not identified in either Bennett or Lin. For example, the Examiner alleges that "Lin notes that the individual [spoken dialogue agents] handle their own domain data," thus alleging that Lin's system describes cooperative processing in which "each SDA can utilize the services offered by the other SDAs." The Examiner's reliance on the agent society of Lin is deficient, however, as Lin does not disclose, teach, or suggest that the agent society is configured to communicatively couple the services of each of an "agent manager, a system agent, the plurality of domain agents, and an agent library," nor has the Examiner even alleged that Lin discloses, teaches, or suggests an agent architecture that includes such a combination of components.

Thus, even if Lin does describe an agent society in which each SDA has access to the same set of network-enabled services and databases, the claimed "agent architecture" specifically recites various further components, which Lin does not disclose, teach, or suggest. For example, as illustrated in Figure 3 of Lin, the agent society described in Lin includes a user interface agent, one or more SDAs, a facilitator, dialogue state and history, and one or more databases accessible over the Internet. Even if the SDAs in Lin were to be considered analogous to the claimed "plurality of domain agents," Lin does not disclose, teach, or suggest that the agent society further includes the other recited components of the agent architecture, including at least an "agent manager, a system agent, . . . and an agent library." Thus, to the extent that Lin even describes agents that share "coupled services to create a response," Lin does not disclose, teach, or suggest that the shared services include "services of each of an agent manager, a system agent, the plurality of domain agents, and an agent library."

As such, for at least the foregoing reasons, Bennett and Lin, either alone or in combination, also fail to disclose, teach, or suggest at least the feature of "an agent architecture configured to communicatively couple services of each of an agent manager, a system agent, the plurality of domain agents, and an agent library, wherein the selected domain agent is configured to use the communicatively coupled services to create a response to the formulated question or command," as recited in independent claim 1, for example. The rejection is therefore further improper and should be withdrawn for at least this reason.

Independent claim 28 includes features similar to those set forth in independent claim 1. Dependent claims 2, 4, 6, 13, 15-17, 22-23, 27, 31-32, and 41 depend from and add features to one of independent claims 1 and 28. Thus, the rejection of these claims is likewise improper and must be withdrawn for at least the same reasons.

2. CLAIM 2

In addition to the above-discussed distinctions regarding independent claim 1, neither Bennett nor Lin, either alone or in combination, disclose, teach, or suggest at least the feature of "an event manager configured to send and receive events to components of the natural language speech processing system to coordinate interaction among the components of the natural language speech processing system, wherein the event manager includes a multi-threaded environment configured to enable the natural language speech processing system to provide real-time responses to a plurality of questions or commands across a plurality of user sessions," as recited in claim 2, for example. The Examiner identifies the user interface agent of Lin as allegedly corresponding to the recited "event manager" feature.

However, as illustrated in Figure 3 of Lin and as explained in the corresponding text, the user interface agent only "serves as the client connected to different task agents," whereas the spoken dialogue agents "handle the dialogue and access to the database server so as to respond to user's requests in their respective domains." Lin, Section 2.2. Additionally, Lin explains that "domain switching is decided by the facilitator," and that "the currently active SDA should notify the UIA to switch to that domain" when the facilitator judges the current utterance to be of a different domain. Lin, Section 3. Thus, Lin describes different components

for handling interaction with the SDAs, namely the user interface agent and facilitator, whereas the claimed invention recites a single component, the "event manager," as coordinating interaction among the components of the system. Furthermore, because the facilitator in Lin plays a significant role in handling the domain switching protocol, the Examiner has taken an inconsistent position in identifying the user interface agent as allegedly corresponding to the claimed "event manager."

Furthermore, although Lin describes a system that can support multiple different domains "to maintain consistent dialogue across concurrent topics," Lin does not disclose, teach, or suggest that the system includes "a multi-threaded environment configured to enable the natural language speech processing system to provide real-time responses to a plurality of questions or commands across a plurality of user sessions." Rather, Lin describes a system in which only one domain can be active at any given time, with concurrent domains only being supported through a domain switching protocol that transfers dialogue state and history information. See Lin, Section 3. Thus, the system described in Lin would not be able to "provide *real-time responses* to a plurality of questions or commands across a plurality of user sessions." Instead, because Lin can only support multiple concurrent sessions using the domain switching protocol, Lin cannot provide real-time responses across all of the sessions because "the dialogue state and history is no longer stored in the SDA after it is disconnected." Lin, Section 3.1. Bennett fails to cure at least this deficiency of Lin.

Therefore, for at least the reasons given above, Bennett and Lin, either alone or in combination, fail to disclose, teach, or suggest at least the feature of "an event manager configured to send and receive events to components of the natural language speech processing system to coordinate interaction among the components of the natural language speech processing system, wherein the event manager includes a multi-threaded environment configured to enable the natural language speech processing system to provide real-time responses to a plurality of questions or commands across a plurality of user sessions," as recited in claim 2, for example. The rejection is therefore improper and should be withdrawn.

3. CLAIMS 7-8, 10-12, 14, 18-21, 24-26, 29-30, 33-39, AND 42-43

The Examiner has also rejected each of claims 7-8, 10-12, 14, 18-21, 24-26, 29-30, 33-39 and 42-43 under 35 U.S.C. § 103 as allegedly being unpatentable over the combination of Bennett and Lin, and further in view of one or more additional references. In particular, the Examiner has rejected (1) claims 7-8, 10-12, 30, and 38-39 over Bennett in view of Lin, and further in view of U.S. Patent No. 6,937,977 to Gerson ("Gerson"), (2) claims 14 and 33-37 over Bennett in view of Lin, and further in view of U.S. Patent No. 6,185,535 to Hedin et al. ("Hedin"), (3) claims 18, 20-21, and 29 over Bennett in view of Lin, and further in view of U.S. Patent No. 6,420,975 to DeLine et al. ("DeLine"), (4) claims 19 and 38-39 over Bennett in view of Lin and further in view of DeLine and yet further in view of Gerson, and (5) claims 24-26 and 42-43 over Bennett in view of Lin and further in view of U.S. Patent No. 6,980,092 to Turnbull et al. ("Turnbull"). Each of these rejections are improper for at least the reason that the references relied upon, either alone or in combination, fail to disclose, teach, or suggest each and every feature of the claimed invention.

More particularly, for at least the reasons discussed above, neither Bennett nor Lin, either alone or in combination, disclose, teach, or suggest at least the features of "a speech recognition engine configured to recognize at least one of words or phrases from the electronic signal using at least the data received from the plurality of domain agents, wherein the data used by the speech recognition engine is dynamically updated based on at least a history of one or more prior dialogs associated with the user," as recited in independent claim 1, for example.

Moreover, for at least the further reasons discussed above, neither Bennett nor Lin, either alone or in combination, disclose, teach, or suggest at least the features of "an agent architecture configured to communicatively couple services of each of an agent manager, a system agent, the plurality of domain agents, and an agent library, wherein the selected domain agent is configured to use the communicatively coupled services to create a response to the formulated question or command," as recited in independent claim 1, for example.

Each of Gerson, Hedin, DeLine, and Turnbull fail to cure at least the foregoing deficiencies of the combination of Bennett and Lin. Accordingly, for at least the foregoing reasons, the references relied upon, either alone or in combination, fail to disclose, teach, or suggest each and every feature recited in independent claim 1.

Independent claim 28 includes features similar to those set forth in independent claim 1. Dependent claims 7-8, 10-12, 14, 18-21, 24-26, 29-30, 33-39, and 42-43 depend from and add features to one of independent claims 1 and 28. Thus, the rejections of these claims are improper and should be withdrawn for at least the foregoing reasons.

CONCLUSION

Having addressed each of the foregoing rejections, it is respectfully submitted that a full and complete response has been made to the outstanding Office Action. As such, the application is in condition for allowance. Notice to that effect is respectfully requested.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

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Respectfully submitted,

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